Creosote removal in the Northwest Straits: an important piece of nearshore marine habitat restoration

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The Northwest Straits Commission (NWSC) and Washington Department of Natural Resources (DNR) are launching a joint project to identify and remove creosote-laden wood materials from beaches throughout the seven Northwest Straits counties.

Creosote contaminated materials have been observed on beaches throughout the Northwest Straits region (see figure 1). These materials are frequently pieces of pilings that have fallen from derelict docks and piers or railroad ties from nearby tracks. These materials, whether freshly washed up or buried in the intertidal for decades, are found to be leaching creosote on a continual basis.

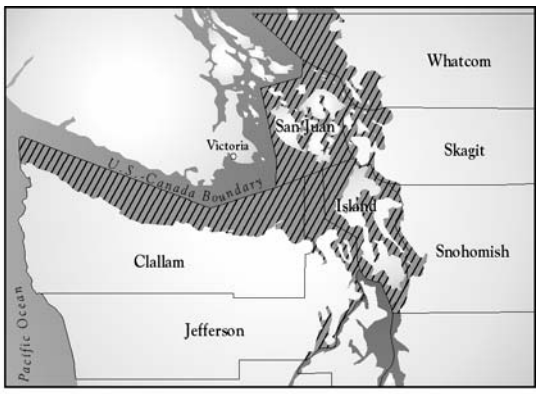

Figure 1. The Northwest Straits Region

Environmental Issue of High Concern

The NWSC and DNR have both identified creosote removal as a high priority and are working with marine resources committees (MRCs) to develop strategies for removal. Creosote is comprised of over 200 different chemicals, including many known toxicants. When exposed to sunlight, the chemicals in creosote are more likely to leach from the wood. Creosote compounds bind to the sea surface microlayer where many eggs and larvae float and juvenile salmon forage.

The Puget Sound Action Team's State of the Sound 2004 report identified creosote as a pollutant of concern for water and submerged lands because it contains numerous polycyclic aromatic hydrocarbons (PAHs) know to be toxic (PSAT 2004). Researchers with the Skagit Marine Resources Committee found that even 60 year old pilings are leaching creosote daily into the marine environment and a scratch with a finger nail can bring fresh chemicals to the surface (Dinnel 2004). One cubic foot of creosote treated wood contains at least 20 pounds of creosote (City of Bellingham 2003). Edible fish and seafood captured from creosote-contaminated areas or held in creosoted cages have been found to contain increased concentrations of PAHs and PAH metabolites (Melber et al. 2004).

The marine shoreline in Puget Sound is contaminated with PAHs from many sources. Boats, marinas, and stormwater all contribute PAHs and efforts exist to stem those non-point sources through control measures. Creosote-treated wood is a significant source of PAHs that has not been addressed in any systematic fashion and its removal is remarkably straight forward and effective.

Creosote laden wood is easily identified and removal is clearly achievable. The Whatcom and Skagit MRCs and the Padilla Bay National Estuarine Research Reserve have already taken action to remove creosote from beaches and their work provides a model and important lessons for a larger regional project. Another removal project occurred in early 2005 at Camp Casey in Island County through the efforts of Washington State Parks and DNR.

The Skagit MRC demonstrated that creosote wood can be systematically identified, measured and recorded using trained volunteers. Once the inventory information is completed, removal efforts can begin. Removal can occur in different ways – either hand carried upland, loaded on barges in the water or placing them in slings and carried out by helicopter. The preferred method for disposal is to transport them to the hazardous waste facility in Klickitat County.

Given the large number of beaches that have creosote materials on them, the NWSC and DNR are prioritizing removal efforts on beaches that have the highest accumulation of debris and have known forage fish spawning locations.

Costs

Costs vary depending on the site and removal technique. The Skagit MRC removed approximately 70 tons of creosoted materials for about $35,000. The NWSC and DNR expect to maintain this frugal approach to removal and employ volunteers as much as safely feasible.

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